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A Cognitive-Response Model

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College of Commerce and Business Administration
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A Cognitive-Response Model

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"Attitude research" has traditionally occupied a central place in the study of human behavior, and an increasing amount of research effort within the consumer research community is being directed in this area. In introducing new research, it may be useful to develop a perspective on the questions that may be asked about the attitude construct. As a starting point for such a question-based framework, attitude research may be dichotomized into two categories: attitude structure and attitude dynamics. Studies of attitude structure are concerned with valid representation of the cognitive elements which underlie an existing product attitude. One important question which is asked is, "Upon what cognitive cues is the judgment of a multidimensional product based?" Research focusing on this question attempts to identify a set of cues and demonstrate that the set satisfactorily predicts the summary evaluation (attitude) of the product at a particular point in time. Recent consumer research has focused on that set of elements proposed by the expectancy-value notions of Fishbein (7) and Rosenberg (22); controversy has arisen about the optimal set of these elements (variously called "beliefs," "evaluative dimensions," "possessions," "affective loadings," "perceived instrumentalities," or "value weightings") and their operational measurement (e.g., 4 , 19, 24, 26). A second question, closely related to identification cues is, "What is judgmental law by which the elements identified are combined?" Given the isolation of the inputs and the output, what psychometric function explains the actual process used in a static situation? The models cited above assume a linear compensatory processing rule. Other assumptions, such as conjunctive or disjunctive rules, have been proposed and demonstrated (5), but consumer researchers have not exhibited interest in this question as of yet.

It should be noted that the questions framed so far take the cues used by the individual as given; the research is cross-sectional and is not concerned with variations in the structural components or in the attitude associated with the product over time. Research in attitude dynamics centers on this process of modification of existing attitudinal cues from time t to time t+1. In this context, somewhat similar questions may be asked: "What are the cues which serve as intervening mediators of attitude change? In what way do these cues interact within the process of change? What environmental factors influence the answers to the first two questions?" While applied researchers have begun to demonstrate interest in cognitive models of attitude structure, no comparable interest has been expressed in the cognitive processes relating to attitude dynamics. The research that has appeared has investigated the effect of a situational variable or an individual variable (or occasionally both in interaction) on an index of the summary outcome, but little *empirical* attention has been directed at representation or explanation of the processes mediating change. To a certain degree, this is attributable to an insistence (among both basic and applied researchers) in relying on traditional "black-box" methodologies in dynamics research, and a reluctance to explore the design requirements necessary to direct "process-monitoring" measurement. A systematic review of the criterion variables used in attitude change designs show that non-involving, information-poor scale responses have been dominant.

A "Cognitive-Response" Perspective

Hierarchical models describing the process of attitude dynamics have been offered at the conceptual level by a number of observers. Systematic elaboration of the models intuitively proposed has not been

prevalent. The idea that attitude modification involves a sequential, multi-stage process is common to all models, although the number of stages delineated by various proponents of such hierarchical models differs. An example of such a model is McGuire's (16) "information-processing" model in which each stage is linked probabilistically to the preceding stage. The initial stages in the process are "attention" to new information and "comprehension" of this information. The third stage in the model is "yielding" to what is received. Attitude modification occurs after this stage. Although the model includes two additional stages which complete the linkage between attitude modification and overt behavior, only the initial mediators are relevant here.

The inclusion of mediating stages related to both a reception process and a yielding process is common to models of communication. Of interest is the tendency to place a preponderance of the explanatory burden on the reception mediator. This single-minded attention to the reception or learning process is evident in McGuire's description of the dynamics of the information processing model: "Use of the information-processing approach involves predicting how an independent variable will be related to attitude change by analysis of the variable's likely effect on learning the contents of the social influence communication. The guiding idea here is that the essential problem in a social influence situation is adequate reception of the message (16)." This orientation suggests, therefore, that cues contained within the incoming information areof primary importance in mediating attitude change. A direct relationship between comprehension of message content and attitude change has been difficult to demonstrate, however; various studies have

produced no evidence of a relationship, or evidence of significant positive or negative (or both) relationships.

However, if the receiver is viewed as an active information-processor, he can be expected to attempt to relate the incoming information to his existing structure of beliefs, feelings, or values. The interaction of communication content as transmitted with the recipient's cognitive structur will generate additional cues. These relational activities thus represent the source of another major class of cues, the spontaneous cognitive responses. An evolving body of empirical evidence suggests that these spontaneous responses (what we usually refer to as critical thought) are the primary mediators of attitude modification (8) although relevant research in the applied area of advertising is virtually non-existent. However, representation and direct empirical investigation of the cues used in the reception and yielding process has not progressed much beyond the broad classifications suggested by the hierarchical models.

This study was therefore concerned with modeling the yielding stage of the persuasion process in terms of an array of spontaneous cognitive responses to an advertising stimulus. An integral first step entailed the theoretical identification of cognitive response variables relevant to marketing communications. Directly related, and most challenging, was the development of rigorously defined operational measures for these variables together with an experimental methodology for elicitation of the required direct subject protocols.

Identification of the Cues

Counterargument

While direct investigation of the spontaneous processes antecedent to attitude change has been scarce, certain types of cognitive responses have been the focus of conjecture at the conceptual level. Subvocal "counterargument" has been proposed as a possible mediator of communication acceptance by various psychologists.

A counterargument is triggered when incoming information is compared to the existing belief structure and a discrepancy is noted. A counterargument represents a spontaneous subvocal belief statement, related psychologically to the message topic, which neutralizes or counters message evidence. Festinger and Maccoby (6) accorded counterargument a major role in explaining their finding of an absolute increase in attitude change under conditions in which audience members were partially distracted from the speaker's message. Distraction, according to Festinger and Maccoby, interferes with the individual's ability to counterargue, thus eliminating one important means by which he resists yielding to message arguments. (As an example of the general failure to attempt direct inquiry into the processes mediating persuasion, only two of the more than thirty subsequent studies of distraction effects in the marketing and psychological literature treated counterargument as a dependent variable.)

Earlier references may be found which point to essentially the same type of cognitive reaction (10, 12). McGuire (15) used counterargument as an independent variable in a program of research concerned with making attitudes resistant to change. Scattered studies have examined the effects of variables such as level of threat (11) or message discrepancy (2) on anticipatory or concurrent counterargument. Counterarguments are therefore one potentially important mediator of attitudinal acceptance of advertising messages.

Source Derogation

An alternate type of resistive response focuses on the source of the persuasive message content. Source derogation has been traditionally viewed as a viable mode of resolution which may serve as a substitute for cognitive reorganization when discrepant information is confronted. This type of response may be used quite frequently in situations where the source of the message is easily discounted as biased (an unfortunate description of mass-media advertising) or where counterargument is difficult (1). Source derogations may be expected to serve as cues which contribute toward rejection of arguments only in the immediate encounter; their effect on immediate attitudinal acceptance may be as devastating as the effect of counterarguments, but the durability of this effect over time is open to question. In terms of the cues entering the model, we might therefore expect that counterarguments are generated and retained as an operating factor within the structure related to a product, whereas source derogations are generated but subsequently disassociated from the structure.

Support Argument

If counterargument represents one interesting cue, it is reasonable to assume that support-argument may be equally important. In relating incoming information to his existing belief structure, a receiver may activate responses which indicate that congruent associations have been discovered, that the arguments in the message agree with or are supported by some belief which already exists. Generation of this type of cue would appear vital if advertising is to have a positive influence.

Strangely, support-argument has received substantially less consideration than counterargument in attitude change theories; examination of spontaneous support-argument has likewise been relatively ignored empirically. In modeling cognitive response processes, there is, however, a compelling logic to giving support-argument formal representation. Examining the relationship of spontaneous support-argument to attitude modification may also provide a basis for a clearer conceptualization of the true role of learning.

Integration of the Cues

One of the most interesting problems in attitude dynamics is attempting to understand how individuals integrate the separate cognitive response cues in reorganizing their attitude when faced with persuasive messages. Virtually all theories of attitude change, impression formation and human judgment have in common the idea that individuals utilize cognitive elements in combination with each other. Without question, the idea of additive linear integration dominates the literature of each of the above areas. All of the linear compensatory proposals derive from a general limear model of the form:

$$A = \Sigma_k w_k s_k$$

where A is the attitude, impression, or judgment
s is the scale value of an individual element
w is the weight attached to that element

Several models based on this integrative hypothesis were developed and tested in this study. As Rosenberg (23) points out, the number of assumptions permissable within this general model is quite large. Rather than attempt to be exhaustive at such an early stage in this type of research, only assumptions which appeared theoretically justifi-

able a priori were examined.

One model, the "counterargument model," makes the assumption that counterarguments, in and of themselves, are the primary mediators of attitude modification. This is equivalent to assuming that only negative belief-cognitions directed toward the topic of the advertising message need be considered in explaining attitudinal acceptance of the message. Such an assumption appears viable given the heavy relative emphasis placed on this particular type of cue in divergent attitude-change theories. Although processing of uni-directional elements only is not a standard assumption in judgmental or impression-formation models, the nature of the variables and of the process under examination here are quite different.

The more common assumption of a compensatory integration across more than a single subset of cues is also quite reasonable on a priori basis. For example, it is reasonable to expect that support- and counter-arguments are both considered, with one balancing the other, when a person processes the communication. This broadens the set of cues entering the model to include support arguments. Carrying this elaboration to its logical end, the model can also be broadened to accommodate source derogations.

The concept of a weight in the linear model incorporates the idea that individuals assign different levels of importance to some of the available cues. It may be that certain responses would be recognized as more important as they are elicited, and that these responses then contribute disproportionately as mediators of attitude modification. As is typical with weighted models, the weights (importance ratings) assigned each element were not theoretically predictable but are

empirically-based parameters which rely on information in the data itself.

Unweighted (w_k=1 for all $_k$) and weighted (w_k=subjective importance ratings for each $_k$) integrative processing models were proposed as alternatives to the "counterargument model." The relationship of these unweighted and weighted integrational models of cognitive response processes to the familiar Fishbein model of attitude structure should be noted. Beliefs are the integral cognitive element of both the Fishbein formulation and the spontaneous counterargument, support argument, and source derogation concepts. The Fishbein model uses a standardized set of existing beliefs to predict existing attitude. The unweighted integrative model proposed here is the sum of positive and negative beliefs spontaneously activated in response to a persuasive advertisement. The weighted integrative model is the sum of spontaneously activated beliefs with each belief weighted by its subjective importance. In contrast to the Fishbein model, the belief-cues entering the cognitive-response model are not limited to product-specific beliefs; beliefs about related concepts or objects are also allowed to enter. The only criteria is that the spontaneous responses are perceived by the receiver as linked in some way to the product attitude structure or to the new information. Thus, the representation and processing axioms suggested for explanation of dynamics are conceptually compatible with a well-validated structural model; the divergences of range and type of admissable cue are necessitated by differences in the behaviors in question.

Situational Factors

The third question of interst concerns the identification of environmental factors (other than the message cues) which will have an effect on (a) the type of cognitive-response cues elicited, and (b) the

usage of the cues as mediators of attitudinal acceptance. Environmental factors may operate either through an *arousal* influence on a person's cognitive response behavior, or through an influence on the *capacity* of the person to engage in critical information processing. Two variables, prominent in structuring the environment of mass-media advertising, were singled out for study.

Decision Involvement

Potential consumers are exposed to mass media advertisements in an environment cluttered with other stimuli. In most cases, their initial involvement will be directed toward the editorial matter of the media (programming and articles) rather than the commercial messages. The individual's motivation to cognitively respond to the advertisement is not great. However, when a person is confronted with an advertisement which he perceives as particularly relevant to an impending decision, he can be expected to engage his cognitive facilities in critical processing of the message.

These two situations, representing variations in *acute* involvement with the advertising information, are thus of interest as they result in contrasting processes of cue utilization. It is important to distinguish this dimension of involvement from "issue involvement." "Issue involvement" refers to an individual's concern with a given topic because it is intrinsically involving to that person, presumably due to a close linkage with the person's basic needs or ego. Issue involvement is *chronic* and is *product-specific*. [For representative research, see (24)]. Decision involvement, conversely, is situational and is related to the perceived relationship of a particular task (e.g., critical information processing) to a particular problem solution (e.g., an impending decision). It is closely related to Zimbardo's (30) description

of "taks" involvement: "the individual's concern with the consequences of his response or with the instrumental meaning of his opinion ( )."

Message Modality

Message modality is of interest because of a hypothesized influence on the capacity of an individual to engage in critical cognitive response. A review of the psychological and marketing literature revealed that modality has received surprisingly little theoretical or empirical attention with respect to models to attitude dynamics; empirical studies have largely interchanged modalities without systematic control or consideration. Theory in this area remains primarily intuitive. Accordingly, a theoretical perspective was established by the author, and its implications explored.

Audio communication is characterized by an uncontrollable rate of cognitive stimulation; with print communication exposure rate is controlled by the receiver. Mass media advertising imposes multiple cognitive tasks on the receiver. Each of these tasks (intake of message content, intake of ancillary situational information, and cognitive response to message content) competes for a share of the individual's total cognitive capacity. When exposure rate is uncontrollable, little opportunity exists to allocate among the different cognitive activities by such behaviors as re-reading a passage or pausing in the midst of stimulus scanning to develop counterarguments.

Individuals can be expected to attempt to handle the situational demands arising from audio and print transmission as efficiently as possible If we assume people are adaptive in their behavior, then quite different information-handling strategies will have evolved from consumers' repeated confrontations with audio or print media. The possibility of different

strategies of cue utilization implies that different theoretical models of attitude-change process would be necessary for different physical modes. Given the extremely important decisions about channel selection facing the advertising community and the formal ignorance of modality in contemporary attitude-change theory, the effect of the mode variable becomes an important question.

Elicitation and Coding of Spontaneous Protocols

Seeking answers to the research questions summarized earlier required going beyond traditional input-output analysis and attempting to obtain measures of the events occurring between input (information presentation) and output (attitudinal acceptance). Elicitation and analysis of verbal protocols was thus an important part of the design. Protocol elicitation and coding techniques are much more primitively developed in attitude-dynamics research than in problem-solving simulations. Only scattered attempts at measuring spontaneous thought processes of subjects exposed to communications have appeared in the social-psychological literature; interest has picked up very recently, but no hard concensus existed upon which to base the current methodology. Techniques have ranged from having the subject concurrently verbalize his responses during exposure (11) to simply asking for self-reports of time spent counterarguing (31). However, the most common method is the recording of thoughts on a free-response measure immediately after message exposure. When this exercise is administered unexpectedly and with tight timing controls, it represents a valid means for measuring spontaneous processes.

In developing a set of variables around which theoretical relationships are to be specified, it is desirable that each variable be clearly defined in terms of inclusions and exclusions. When the measurement process involves coding of subject protocols reported in free-response, the need for well-developed definitions is even more acute.

A critical review of operational measures of cognitive response used in previous research is available elsewhere (29). An operational definition of counterargument proposed by Osterhouse and Brock (21) served as a starting point in this study, although important extensions and modifications were made. Briefly, these include (a) adaptation to acknowledge that marketing communications place emphasis on both an object (the product) and an act (purchase, usage) and responses may therefore focus on either characteristics of the product or its alternatives and consequences of the act or alternative acts; (b) recognition of rhetorical questions as a legitimate and frequently used form of counterargument expression; (c) specific exclusion of purely affective cognitions from the definition of counterargument or support argument; and (d) development of operational definitions for support argument, source derogations, and curiosity expressions. No previous design had attempted to rigorously define these variables. The operational measures used in this study are presented in Appendix A.

Measurement Validity

One potential problem which confronted the research design concerned the degree to which cognitions recorded actually correspond to those spontaneously evoked during message exposure. The question is whether the subject is listing thoughts which occur as a result of the researcher's request rather than which occurred naturally in response to the adver-

tising stimulus. Two methods were available for handling this problem within the design. The first entails imposing a severe limit on the time given the subjects to respond. While some previous designs had imposed ten-minute limits, that was felt to be much too lenient to insure internal validity in this study. Consequently, extensive pretesting of the measurement technique was undertaken using the actual experimental message. The essential guideline is, of course, to allow a subject sufficient time to completely record the honestly spontaneous cognitions without allowing time for extraneous, reactive cognitions. The pretesting established that a time limit of three minutes appeared optimal for controlling this potential source of invalidity within the design.

It was noted that Krugman (13) advised using a somewhat different method for controlling for spurious cognitions. The subject was asked, after he verbally stated each thought in a post-exposure interview, to reconsider whether the thought had been evoked during exposure or after exposure. This procedure would appear to stretch out the protocol-gathering process significantly, thus making conditions for generation of reactive responses ideal. Another problem with this control procedure was that the "during-after" dichotomy may be more rigid than should be required by validity objectives. The researcher assumed that cognitive response must follow perception of communication content by some increment of time. Thus, it was felt that ideas occurring immediately after exposure to new information should still legitimately be considered as "concurrent" responses.

One additional measurement question concerned the sequence in which measures of the cognition listing and attitudinal criterion measures should be elicited. While arguments questioning the effect of either sequence on measurement validity may be presented, taking the spontaneous measure

before the attitude expression represents the process as it naturally occurs and probably results in less distortion of spontaneous responses than the reverse order. Limited evidence suggests that measurement sequence has no important effect on the nature or level of spontaneous response (3).

Subjects

Subjects for this study were 165 adult women drawn from the memberships of various church and social organizations in the central Pennsylvania area. The study was described in all contacts with group leaders or members, as concerned with mass media communication and conducted under the auspices of the Center for Research at the Pennsylvania State University. There was no mention of advertising, marketing, or business administration. Subjects ranged in age from 26- to 53. The women comprising this subject pool were very heterogeneous with respect to their educational, occupational, and social class backgrounds. Compensation for participation was made to the groups rather than to individuals.

Experimental Communications

The topic of the experimental advertisement was a product called "Synthetic Meals," a line of food products made from soybeans and soybean derivatives. This product, although technically hypothetical, was selected after extensive pretesting had established that it met certain criteria judged important in producing a fair and reasonable test of the research hypotheses. Pretesting with similar subjects had shown that the product was characterized by a pre-experimental range of attitudinal positions across individual women, absence of a marked negative or positive bias, a reasonable level of inherent interest, and a moderate degree of newness. Regarding the product's newness, it

was found that the product was not felt to be unexpected or discontinuously innovative (somewhat similar products exist). The product has added interest as a research topic because it represents a potential solution to an important social problem.

The experimental advertising message contained six arguments in favor of adopting the product. Briefly, the arguments were: that the product is comparable in taste to natural foods, that the product provides nutritive balance which the typical family meal may lack, that preparation of this product is more trustworthy than packing of natural foods, that the product can aid in weight-control for children, that natural foods may be polluted, and that the price of natural foods is rising. Reading time for the Print version was approximately 1-2 minutes. Playing time for the Audio version was 1 minute, 10 seconds. The Audio version was taped by a professional radio announcer using the station's facilities. The text of both Audio and Print versions was, of course, identical. In order to simulate as far as possible the natural conditions in which people encounter advertising messages, the experimental advertisement was presented in the midst of surrounding "editorial" matter. This consisted of an excerpt from a national magazine feature, logically adaptable to both print and radio presentation, which preceded the advertisement. This was done to enhance the impression, created by the introduction, that the entire communication was an excerpt taken at random from the mass media, and as a control for artificial stimulation of response to the ad. The editorial passage evoked no responses related to the product nor any overt emotional responses in pretest interviews. The editorial matter was 182 words in length; the advertising message was 192 words long.

Procedure

Experimental sessions were conducted in assembly rooms in the home city of the subject. Subjects were randomly assigned to the four experimental treatments as specified by the 2 x 2 crossed factorial design. The subjects in a particular cell (final cell size of 40) were processed in groups of five or less. Naive experimental assistants monitored each session. All remarks made by the assistants were read directly from a prepared script. Subjects were seated so as to preclude chances for visual or verbal interaction.

The introduction described the study as concerned with people's normal reaction to mass media communications. Subjects were told they would be presented an excerpt from a national magazine or radio show consisting of a regular feature story and an advertisement. Forewarning of the general nature of the communication was felt to be desirable in that people typically are aware of the general nature of what they will encounter in mass media exposures.

The decision involvement manipulation was accomplished by instructing subjects in the "High Decision Involvement" treatment that they could expect to make a short-run decision about the product appearing in the impending advertisement. The relevance of this decision in terms of their families, their own time and effort, and their personal finances were emphasized. Subjects in the "Low Decision Involvement" treatment received no such instruction.

Subjects were asked to approach the entire communication in a natural manner. They were told that there was "no particular need to memorize." Pretest subjects had revealed that they found themselves trying to memorize the message content in a manner they felt to be atypical of their natural reading or listening style. Because this singular attention to rate-memorization might have interferred with the

spontaneity of subjects' cognitive responses, it was deemed advisable to dampen this unnatural memorization urge.

Subjects were then exposed to the experimental communication. Immediately after communication exposure, subjects were given booklet B which contained the Cognition Listing dependent measures. Subjects then turned to Booklet C which contained the remainder of the dependent measures. Subjects were informed there was no time limit for Booklet C. They were asked to work straight through the booklet to the end. Order of presentation of the dependent measures in Booklet C was: attitudinal acceptance measures, reception measures, cognition weighting, cognition origin. Completion of Booklet C took approximately 25 minutes. Running time for the entire experiment was approximately 35-40 minutes.

Dependent Measures

Cognition Listing

The Cognition Listing measure was contained completely in Booklet B. As discussed earlier, this task was unexpected as a control against an artificial response set. Subjects were instructed to list any and all thoughts relevant to the product Synthetic Meals or to the advertising

message which had occurred to them during exposure or which occurred to them now. They were instructed to ignore spelling, punctuation, and grammer since cognition content, not cognition form, was of primary interest. In order to facilitate coding, subjects were asked to use a separate line for each separate thought. Directly beneath the instructions were 18 horizontal lines stretching the width of the paper about ½ inch apart.

Attitudinal Acceptance

The first item used to measure attitudinal message acceptance consisted of elicitating the response of the subject to the statement, "The arguments about the Synthetic Meals product contained in the advertisement were very convincing." The focus of this measure was on the product dimensions covered in the communication; it will be labeled A_c. Subjects responded on a six-point scale with each point labeled as to degree of agreement. Labels ranged from "strongly agree" to "strongly disagree."

The second measure of attitudinal acceptance consisted of subject response to the question, "How do you yourself feel about the product Synthetic Meals?" The focus was on overall attitude toward the product (A_p). The response-scale consisted of 26 dots spaced 1/8 inch apart. Endpoints of this scale line were labeled, "I like it very much" and "I don't like it at all." Subjects circled the dot which best designated their feeling on the question. In order to determine the effect of the message on behavioral tendencies, a measure of buying intention (BI) was used as a surrogate for actual purchase behavior. Subjects responded to the question, "Will you purchase the Synthetic Meals product when it becomes available in your local area?" Subjects responded on a five-point scale with each point labeled. Labels ranged

from "definitely will" to "definitely won't." This measure was taken at the end of Booklet C; it therefore came approximately 20 minutes after the first two measures.

Reception

Subjects were asked on an open-ended question to reproduce as many of the arguments included in the advertising message as they could. This measure was viewed as more integrally related to post-communication attitude formation than the second measure. A second measure of reception consisted of a number of multiple-choice questions about specific points in the advertising message.

Measurement of Cognition Weights

Subjects were asked to rate each separate thought they had recorded earlier on the Cognition Listing measure with respect to its importance to them in forming an opinion about the Synthetic Meals product. This rating was accomplished by having the subject place a number corresponding to perceived level of importance beside each thought at the edge of the Cognition Listing measure. A rating of "1" was assigned if the thought was "extremely important;" a rating of "2" if the thought was "moderately important;" a rating of "3" if the thought was "slightly important."

Measurement of Perceived Cognition Origin

Subjects were asked to evaluate each separate thought recorded earlier on the Cognition Listing measure according to its perceived origin. If the subject felt that the thought had originated directly in the advertising message, she labeled it with an A. If she felt the thought had been a reaction by her to something stated directly in the advertisement, she labeled it with a B. If the subject felt the thought

was one that she had originated and was not a reaction to something directly stated in the advertisement, she labeled it C.

Coding of Cognition-Listing Protocols

Three members of the editorial staff of the Journal of Marketing served as protocol judges.

The scoring convention adopted by this study was as follows: the basis for final rating of each cognition was the modal rating of the three judges. If 2 of the 3 judges agreed in rating a cognition, that rating was assigned to the cognition. Unanimous agreement among the judges were achieved on 76.7% of the cognitions. Two of the three judges agreed on 22% of the cognitions. Thus, the modal convention resulted in assignment of a rating of 98.7% of the cases on the initial attempt. Only 12 of the 913 cognitions drew initial disagreement among all three judges. These 12 cognitions were presented to the same panel of judges for rejudging . Judges were not told what the ratings in the first attempt had been. Ratings were achieved for all but two of the cognitions on the second trial. Both of the unrated cognitions belonged to the same subject's protocol; that subject's data was consequently eliminated from the study.

An analysis of variance was performed on the first set of cognition ratings to provide an estimate of the inter-judge reliability in assigning category scores to a subject (28, pp. 124-128). A separate analysis was conducted for three different cognitive-response categories of importance to the study: cognitive counterarguments, cognitive support arguments, and cognitive source derogations.

The inter-judge reliability in assigning subject's counterargument scores was .957. The inter-judge reliability in assigning support argument scores was .898. The inter-judge reliability in assigning

source derogation scores was .959. These coefficients provide evidence of high reliability in the coding of experimental protocols. Taking this evidence together with that provided by the high percentage of unanimous cognition ratings, the use of judges working within a framework of rigorous theoretical category definitions was accepted as a valid method for the extraction of cognitive response variables from spontaneous, unstructured subject protocols.

Analysis

Several theoretically derived models were offered as descriptions of the process of cognitive cue utilization in attitudinal acceptance of persuasive advertising. In order to compare these models, regressions were performed using each separate model as a predictor of the attitudinal criterion measures. Separate analyses were performed within each of the experimental treatments to provide insight into the conditional limitations of proposed mediational models. These are presented in Table 1, along with the overall within-class correlations.

The Counterargument Model

The counterargument model assumes that negative spontaneous beliefs are the primary mediator of acceptance, and therefore that variance in post-communication attitude can be explained satisfactorily solely in terms of the volume of spontaneous counterargument. The relationship between counterargument and acceptance should, of course, be inverse. As can be seen from Table , level of counterargument did indeed relate quite strongly to yielding. The within-class coefficient of determination indicates that approximately 32% of the variance in attitude data can be accounted for by that variable's linear relationship to counterargument. Of even greater interest is the cell by cell analysis, which indicates that as much as 54% of the variance in Attitude is attributed to counter-

argument variation (Audio Mode, High Decision Involvement). In fact, the strength of the relationship is contingent to some degree on the mode in which the advertisement was presented. Counterargument proved to be a significantly stronger mediator of yielding among subjects receiving the Audio Mode message than among those receiving the Print version ($Z = 2.10$, $p < .04$).

As can be seen, the strength of the relationship is slightly (non-significantly) attenuated when Attitude$_P$ is the criterion and even more so when the delayed buying intentions measure is the criterion. This decrease in the importance of counterargument as a mediator is logical given the theoretical differences between the three criterions. Cognitions evoked in response to message arguments would be most salient to Attitude$_C$, a measure tied to modification along the product dimensions explicitly deals with by the communication; somewhat less salient in evaluation of the total product (A_P); and even less prominent (among other possible considerations) in determining overt behavioral intentions. This pattern might be expected to hold (and does) throughout the analysis--the more removed the acceptance measure is from that topic defined by message arguments, the less direct the mediating role of message-oriented cues. Note, however, that level of counterargument still accounts for over 20% of the variance in the delayed measure of intentions.

The Unweighted Compensatory Model

This model derives from the assumption that the individual may process the cognitive cues in such a manner that opposing cues linearly balance each other. The index from such a model provides a measure of the net directional impact of the designated cues. Model A limits the admissable cues to message-oriented responses; thus, the difference

between level of support argument and level of counterargument is the predictor. This compensatory model proved to be only slightly more efficient in explaining attitudinal variation than the counterargument model. Formal consideration of support arguments led to a substantial increase in prediction only under limited conditions. Among the Print Mode, High Decision Involvement group, the increase in fraction of variance in Attitude_p explained approached significance ($t = 1.72$, $p < .10$).

While retaining the assumption of equal weighting, the compensatory model may be extended to include the final class of cues, source derogations. The addition of source derogations within the mediational model adds significant explanatory power (relative to the counterargument model) but again the new set of cues appear to operate only under certain conditions.

The within-class correlation coefficient obtained for Model B is significantly higher than that for the counterargument model only when A_C is the criterion ($t = 1.97$, $p < .05$). Additionally, on a within-cell basis, the improvement is significant only within the Print Mode, High Decision Involvement group, and here the difference relative to the counterargument model is significant for both A_C and A_P ($t = 2.09$, $p < .05$, and $t = 3.07$, $p < .01$, respectively).

In summary, models making an assumption that receivers utilize all the cognitive response cues generated appear preferable to the counterargument-only model only under certain exposure conditions (when an acutely attentive receiver is exposed to a commercial message in print). Counterarguments emerge as the most important cue by far in the other advertising environments represented in this study.

Differential Weighting Models

The weighting dimension is the evaluative importance an individual assigns to an individual cognitive response in shaping attitude toward the synthetic food product. The weights were assigned post-hoc; and a linear weighting convention was used ("very important" cognitions assigned a weight of 3; "moderately important" a weight of 2; "slightly important" a weight of 1). The assumption of unequal weighting appears to improve the cognitive response model's explanation of the attitudinal data. Inclusion of the weighting term significantly strengthens the response model's within-class correlation with Attitude_C , relative to the counterargument model ($t = 1.78$, $p < .07$) and to the unweighted compensatory model (Model A) ($t = .229$, $p < .01$). This significant increase is similarly found in predicting Attitude_P ($p < .01$ in both comparisons). Overall, Model C adds approximately .04 to the fraction of variance explained by Model A, and approximately .08 to the fraction of variance explained by the counterargument model. This increment appears to have occurred most dramatically within the Low Decision Involvement treatment. While the differential weighting factor had negligible effect when involvement was high, the effect was reasonably strong when involvement was lower. It adds between .07 and .10 to the explained variance in each of the attitude measures.

Since a controversy has arisen about the value of the weighting term in linear models of structure, weighting within the process of attitude change is of interest. It is clear that in this study, individual women did attach different degrees of importance to various cognitions which they experienced during exposure, and that these weights adjusted the role of the cognitive cue in mediating post-communication attitude. This happened only where subjects were not

highly involved in evaluating the advertising information.

An explanation may lie in the variability of importance ratings across experimental treatments. Given the motivational impetus of high processing involvement, subjects may have concentrated on highly important associations. This would limit the activation of unimportant cues. The more homogeneous the importance weightings, the less the improvement in variance explanation relative to an unweighted model. In support of this proposal, the correlation between weighted and unweighted models is .975 in the High Decision Involvement treatment and .947 in the Low Decision Involvement treatment ($Z = 1.93$, $p < .06$).

Multiple Regression Analysis

The analysis presented so far has taken the form of testing different a priori theoretical assumptions about the role of cognitive responses in mediating the yielding process. This approach enabled the highlighting and comparison of rational models. To provide supplementary insight, multiple regression analyses were performed on the data. Table 2 gives the results of a stepwise multiple regression using all three cognitive response variables plus the two reception measures as regressors. The analysis presented is one in which all candidate variables were forced into the regression equation. The multivariate analysis, as expected, clearly complements the evidence obtained from the testing of the theoretically-derived models. For the pooled sample, counterargument is by far the best predictor of communication acceptance. Counterargument and support argument form the best two-variable set, and source derogation is added to form the best three-variable set. Reception of cues contained within the advertising message was not related to attitudinal acceptance.

This analysis clearly demonstrates that as the measure of attitudinal effect becomes more divorced from the actual advertising message, counterargument engaged in spontaneously during exposure remains strongly related to attitudinal position. This is in marked contrast to the steadily weakening importance of the other two types of cognitive responses. Thus, when Attitude$_C$ is the criterion, all three variables appear to be important; when Attitude$_P$ is the criterion, the weighting of source derogation is substantially decreased; and when Buying Intentions is the criterion, only counterargument and support argument are weighted significantly, with the latter of relatively less importance.

Multivariate analysis performed on a within-cell basis likewise supports the preceding findings. If we use beta-coefficients as indicants of relative importance, the three cognitive response variables contribute almost equally as mediators in the Print Mode, High Decision Involvement cell, while counterargument dominates the other conditions. Multiple correlation coefficients range between .51 and .78 across cells.

Independent Validation of the Relative Importance of the Variables

If, as the preceding analysis suggests, counterarguments are weighted heavier than support arguments, which in turn are more important than source derogations, the post-hoc assignment of importance ratings by the subjects should reflect this. The subjects rated each separate thought in ignorance of any possible coding procedure. These ratings, when aggregated within the cognitive response categories as independently coded by the judges, do indeed reflect an identical pattern of importance. The mean importance rating for counterarguments was 1.41, for support arguments 1.71, and for source derogations 2.02 (1 = very important). Source derogations were rated by the women as significantly

less important to them than either counterarguments ($p < .001$) or support arguments ($p < .001$). Support arguments were rated as significantly less important than counterarguments ($p < .001$). The evidence about variable weighting found in the natural relationships of the coded protocol data and that from subjects' own perceptions of uncoded protocols must be viewed as convincingly validating each other.

Perceived Origin of the Cognitive Cues

The premise that cognitive cues supplied by the receiver are the primary mediator in the advertising influence process forms the foundation for this attempt to define, measure, and explain that process. The preceding comparison of response vs. retention measures supports this assumption. Greenwald (8) proposed a slightly different technique for testing the premise in which subjects are allowed to indicate the origin of each of their cognitions. Such a measure was taken in this study. The protocol cognitions were then regrouped according to this perceived origin system. This breakdown classified 16.7% of the thoughts as advertisement-originated, 47.4% as recipient-modified, and 35.9% as recipient-generated. Cues entailing some receiver input far outnumbered those provided by the message.

These perceived-origin variables were entered as regressors into a stepwise multiple regression analysis. Separate analyses were performed for each attitudinal criterion. The analysis, adjusted for treatment effects, is presented in Table 3. All three types of cues contribute significantly to the prediction of the Attitude_5; however, with the more global measures, only recipient-modified and recipient-generated cues appear important. Since there is little discrepancy among the beta coefficients, it would be premature to draw conclusions about the relative importance of these latter classes.

Discussion

A major finding of the study was that the attitudinal acceptance of a persuasive marketing communication may be modeled quite well in terms of an array of cognitive responses. The cognitive response variables defined for this study appear to be valid representations of the cognitive cues utilized, and the array is successfully represented in terms of these categories. A receiver relies heavily on her evaluative mental responses to message content, rather than on the content itself, to arrive at an attitudinal position after exposure.

Negative cognitions were found to be utilized more directly in mediating attitude than were positive cognitions. In general, negative cognitions oriented toward the specific information presented by the advertisement (counterarguments) were the most important cues in the receiver's information processing strategy. Support arguments and source derogations were admitted as reliable cues within the decision process only when situational variables permitted extensive processing.

Receivers of mass-media advertising messages appear to adopt an essentially defensive information processing strategy. The extremely limited and discrete exposure intervals which characterize mass-media advertising and the undisguised persuasive nature of the messages may be factors contributing to this strategy. The receiver is characterized as attempting to efficiently cope with the barrage of information arriving from the media. The receiver may handle this complex task by (a) not engaging his cognitive processes in certain cases (inattention), or (b) by attempting to utilize the cues generated by his cognitive processes (in cases where these processes are engaged) so as to decrease the risks of error in modification of his existing cognitive structure.

A counterargument is a recognized discrepancy between an entering piece of information and existing elements. No counterargument can occur as a cue unless the incoming information has actually been compared to what is already known. Support arguments can also occur following such a comparison process. This is not necessarily the case, however. The receiver may be aware of support arguments among his thoughts (i.e., those he just took in from the message), even if the comparison process had broken down momentarily. Thus, if receivers do rely on this cognitive comparison process to evaluate new information, counterarguments would represent a more dependable cue than support arguments.

When the communication environment facilitates the cognitive comparison process, the receiver can be more certain that the support argument has actually evolved from the comparison process. Thus, the risk in admitting support arguments as influences on attitude modification are decreased. Two environmental factors related to the efficient operation of the cognitive comparison process would be time available (the receiver's capacity) and intensity of the cognitive activity (the receiver's arousal). The finding throughout the analyses that support arguments were weighted heavily only in the experimental cell which maximized both of the above factors supports this discussion.

The strategies of consumers in processing information from advertising were shown to be situationally adaptive. Differences in modality and in involvement had an influence on the cues used and their relative importance. The effects of other variables which might influence the receiver's capacity for response or motivation to respond should be studied; certain general strategies of information processing across situations defined in terms of capacity and motivation will hopefully be observed.

The influence of message modality on the process of attitude modification has been generally ignored by social psychologists and advertising researchers. Media comparisons remain confined to the probability of eliciting attention (and since these use circulation, readership, and listenership data, the "attention" they indicate is behaviorally suspect). The results here suggest that basic researchers, especially those with an "information processing" perspective on persuasive communication, should begin to find message modality a much more interesting variable in the future.

The importance of source-oriented responses declined substantially as the attitude measure became more removed from the message itself. This pattern is logical, since the value of source rejections as discounting factors should apply only to the specific content of that one message. Changes in the relevance of the different types of cognitive responses across attitude measures was pronounced, and illustrates the desirability of carefully considering the specific attitude object to which a measure refers in analyzing the role of various mediators.

The differential weighting of cognitive responses according to category which is evident in much of the data analysis must be considered as a process separate from the differential weighting of individual cognitions as implied by the Weighted Integrative Model. In this model, the weights entered were those assigned to the individual thoughts, not the categories. Although this assignment reflected the category weighting to a large degree, it can also be concluded that individual weighting within categories took place. Consideration of this type of cue weighting improved the model, although the improvement

was moderate.

It may be instructive to attempt to reconcile these findings within the framework of previous information processing theory. Newell, Shaw and Simon (1958) suggest that the components of an information processing strategy consist of an array of cues (in this case, the spontaneous cognitive responses) and a discrimination net, which represents rules for combining (weighting) the cues. The array may be depicted as below.

		$W_{ca}CA$	$W_{sa}SA$	$W_{sd}SD$
W_{AO}	Advertising origin	$w_1c_1..w_ic_i$	$w_1c_1..w_jc_j$	$w_1c_1..w_kc_k$
W_{RM}	Recipient modified	$w_1c_1..w_1c_1$	$w_1c_1..w_mc_m$	$w_1c_1..w_nc_n$
W_{RG}	Recipient generated	$w_1c_1..w_xc_x$	$w_1c_1..w_yc_y$	$w_1c_1..w_zc_z$

where CA = counterargument
SA = support argument
SD = source derogation

The column weights would be a function of the cognitive decision strategy chosen by the receiver on the basis of situational constraints. The weights cannot be considered as constants, although this study warrants the conclusion that W_{ca} may tend to be relatively higher than W_{sa} or W_{sd} in many communication settings. Similarly, the data suggest that among the row weights, W_{AO} will be relatively less than W_{RM} or W_{RG}. The cognition weights (w_i) would be a function of the content of the cognition, and would probably be related to the particular product dimension on which the cognition focuses. The only conclusion reached here is that there is evidence that these weights should be included in the array.

The findings of shifts in the importance of different types of cognitive mediators as a function of situational variations provides considerable insight into why contemporary research in attitude change is characterized by conflicting results. In a typical persuasion study, when predictions about the effectof an independent variable on beliefs or affect are made frequently only a single mediating process is considered. If the possibility of multiple mediators does occur, the researcher makes an assumption, with no attempt to substantiate about the relative importance of the mediating cues and proceeds from there. Rarely do hypotheses arise which entertain an idea of interaction among the cues. Yet the current results suggest strongly that, for example, a prediction based on the counterargument mediator would have a good chance of success in an audio transmission to an attentive audience, but would be much less accurate in a print transmission to the same audience. Similarly, a prediction based on both counterarguments, source reactions, and support arguments might not be very accurate with an audio transmission to either an involved or uninvolved audience. The point is that we are still quite naive in our ability to analyze a persuasion situation in terms of the mediating cues which will be operative there. Hopefully research building on the initial evidence and approach demonstrated in this study will begin to improve this position.

The use of spontaneous free-response recording of thought processes appears to be an extremely promising method for studying communication effects. Coding of such responses by judges was seen to be a reliable undertaking if the judges work from a framework of rigorously defined variables. Such measures offer important advantages over researcher-imposed measures. The information contained in such protocols is extremely rich compared to sterile, frequently uninvolving measures requiring nothing more than a quick checkmark on the part of the

subject. The set of variables defined here appear to offer a valid representation of certain types of cognitive behavior which may be meaningful to advertising response. Testing of these variables, measured in accordance with the methodology introduced, is recommended. Of course, future research may also wish to take the perspective that this set of cognitive response variables should be elaborated. Different assumptions may be made about the optimal number, content, or dimensionality of the variables recaptured from protocols. Such assumptions are subject to empirical testing. Advertising "verbatims" are frequently gathered from post-exposure interviews to serve a diagnostic function. Analysis of these rich protocols has not typically been systematic, nor has the method of gathering this data been tightly controlled. Application of the methodology and framework developed here in pretesting message effects would seem promising.

The use of multivariate analysis in experimental studies of communication effects has been rare; in fact, a review of basic and applied literature failed to uncover a single instance. Tests of hierarchical models of consumer decision making have appeared ( ), but these have been concerned with more "macro" processes. This study demonstrated two analytic approaches for studying the micro-processes leading to attitude change: testing of theoretically rational aggregative models using bivariate analysis and more exploratory disaggregative multiple regression. Since multiple variables as mediators of attitude change are indicated, the use of these two complementary approaches, in conjunction with the direct process methodology, should find increased use in future research.

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Table 1

RELATIONSHIP OF COGNITIVE-RESPONSE CUES TO ATTITUDINAL ACCEPTANCE

Cue Integration Model	Audio Mode High D.I.	Audio Mode Low D.I.	Print Mode High D.I.	Print Mode Low D.I.	Overall Within-Class
I. Counterargument Model $(\sum_i CA_i)$					
Criterion:					
Attitude$_c$	-.736	-.619	-.443[a]	-.475[a]	-.544
Attitude$_p$	-.635	-.487	-.493[a]	-.445[a]	-.516
Buying Intentions	-.483[a]	-.472[a]	-.425[a]	-.485[a]	-.475
II. Unweighted Integrative Models					
Model A: $(\sum_i SA_i - \sum_i CA_i)$					
Criterion:					
Attitude$_c$	.757	.606	.529	.477[a]	.581
Attitude$_p$	.612	.566	.614	.431[a]	.549
Buying Intentions	.492	.573	.427[a]	.452[a]	.463
Model B: $(\sum_i SA_i - \sum_i CA_i - \sum_i SD_i)$					
Criterion:					
Attitude$_c$	.774	.545	.603	.573	.622
Attitude$_p$	.611	.595	.656	.460	.571
Buying Intentions	.495[a]	.519	.503	.501	.491
III. Weighted Integrative Models					
Model C: $(\sum_i w_i\ SA_i - \sum_i w_i\ CA_i)$					
Criterion:					
Attitude$_c$	.774	.660	.511	.532	.613
Attitude$_p$	.625	.653	.595	.524	.596
Buying Intentions	.490[a]	.614	.435[a]	.540	.508

Model D: $(\sum_i w_i SA_i - \sum_i w_i CA_i - \sum_i w_i SD_i)$

Criterion:					
Attitude_c	.787	.648	.563	.542	.629
Attitude_p	.619	.642	.623	.489	.589
Buying Intentions	.483[a]	.591	.501	.535	.517

[a] $p < .01$; all other $p < .001$

STEPWISE REGRESSION ANALYSIS[a]: CUE-ATTITUDE RELATIONSHIP

Criterion	Variable	Standardized Regression Coefficient	Partial Correlation Coefficient	Fraction of Explained Variance
Attitude_c	Counterargument	-.452	$-.447^b$	
	Support-argument	.234	$.256^b$	.373
	Source derogation	-.197	$-.242^b$	
	Reception (free-response)	-.024	-.029	
	Reception (multiple-choice)	.058	.073	
Attitude_p	Counterargument	-.422	$-.403^b$	.301
	Support-argument	.231	$.235^b$	
	Source Derogation	-.141	$-.168^c$	
	Reception (free-response)	-.030	-.034	
	Reception (multiple-choice)	.042	.051	
Buying Intentions	Counterargument	-.387	$-.361^b$	
	Support-argument	.167	$.165^c$	.232
	Source derogation	-.065	-.075	
	Reception (free-response)	-.115	-.121	
	Reception (multiple-choice)	.056	.063	

[a] pooled sample adjusted for treatment effects

[c] $p < .05$

Table 3

MULTIPLE REGRESSION[a]: PERCEIVED ORIGIN VARIABLES

Criterion	Variable	Standardized Regression Coefficient	Partial Correlation Coefficient	Fraction of Explained Variance
Attitude_c	Advertising-originated	.156	.178[c]	.347
	Recipient-modified	.350	.377[b]	
	Recipient-generated	.338	.381[b]	
Attitude_p	Advertising-originated	.069	.079	.327
	Recipient-modified	.412	.427[b]	
	Recipient-generated	.299	.338[b]	
Buying Intentions	Advertising-originated	-.031	-.035	.274
	Recipient-modified	.378	.384[b]	
	Recipient-generated	.321	.348[b]	

[a] pooled sample, adjusted for treatment effects

[b] $p < .01$

[c] $p < .05$

APPENDIX A

COUNTERARGUMENTS: Statements which are directed against the idea of or the use of the products in the advertising communication and which:

(a) state a specific unfavorable consequence of using the product

(b) state a specific undesirable attribute of the product

(c) suggest an alternative method for handling one of the problems cited in the advertising message

(d) state a specific favorable or desirable consequence or attribute of an alternative product

(e) challenge the accuracy or validity of a specific argument contained in the advertising message

These statements may take the form of declarative sentences or rhetorical questions. If the statement is in the form of a rhetorical question, its intent should be argumentative or express doubt or disbelief.

The following types of statements are not to be considered as COUNTERARGUMENTS.

(a) simple statements of dislike for the product idea

(b) emotional reactions which aren't accompanied by any of the types of statements discussed above

(c) statements falling into any of the other categories (source derogations - supporting arguments - expressions of curiosity)

SOURCE DEROGATIONS

(a) Statements expressing distrust or derogation of advertisements or the advertisers.

(b) Statements expressing dislike for the overall means used by the advertiser in this presentation.

SUPPORT ARGUMENTS: statements which are directed in favor of the idea or use of the product in the advertising message and which:

(a) state a specific favorable consequence of using the product or a favorable reason for using the product

(b) state a specific desirable attribute of the product

(c) suggest an undesirable consequence of not using synthetic meals products

(d) reaffirm the accuracy or validity of an argument presented in the advertisement

The following types of statements are not to be considered as SUPPORT ARGUMENTS.

(a) simple statements of liking for the product

(b) positive emotional reactions unaccompanied by any of the types of statements

CURIOSITY

Statements expressing interest in additional information about the product. These curiosity expressions are distinguishable from rhetorical-question COUNTERARGUMENTS by your judgment on the subject's intent. If the intent was to question validity, express disbelief, or point out a counterargument, the statement is a COUNTERARGUMENT. If the intent is to honestly inquire about more information, it is a CURIOSITY statement.

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